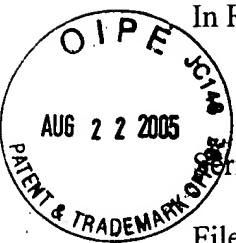


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AF/3727
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PATENT APPLICATION

UNITED STATES PATENT AND TRADEMARKS OFFICE



In Re the Application of:

VON SPRECKELSEN et al.

Serial No.: 09/701,057

Filed: November 22, 2000

Atty. File No.: 44257.830001

For: "THIN-WALLED PLASTICS
BOTTLE, CLOSURE AND
BOTTLING PROCESS"

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

) Art Unit: 3727
)
) Examiner: Nathan J. Newhouse
)
) Confirmation No.: 7735
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SUPPLEMENTAL REPLY BRIEF

Dear Sir:

This supplemental reply brief is filed in response to the SUPPLEMENTAL EXAMINERS ANSWER mailed on June 28, 2005.

The SUPPLEMENTAL EXAMINERS ANSWER generally corresponds to the original EXAMINERS ANSWER mailed on September 2, 2003 with the addition of:

- a short section under item 10 "**Grounds of Rejection**" at page 3 beginning at line 11 which deals with point 1 of the REMAND TO EXAMINER (mailed on May 19, 2005)
- a section dealing with the Nolan reference in item 11 "**Response to Argument**" at page 6 beginning on line 12 to page 7 line 4 which deals with point 2 of the REMAND TO EXAMINER; and
- a section dealing with Exhibit I (Mavin) beginning on page 7 line 8 to page 8 line 8 which deals with point 3 of the REMAND TO EXAMINER.

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Re Point 1 of the REMAND TO THE EXAMINER:

In its REMAND the Board queried whether the examiner had in fact considered the AMENDMENT AFTER FINAL in preparing the ANSWER.

The examiner by making the amendments to change reference from claim 11 to claim 16 asserts that he has, and although he has remarked on the limitation to an injection moulded neck (i.e. a separate spout) and an injection moulded cap, he relies on case law to suggest that the limitation can be ignored in this product claim.

The examiner apparently relies on the same case law to dismiss the limitation to an extrusion blow moulded bottle body.

It is considered that this is a misapplication of that case law.

In order to clearly teach a critical feature of the bottle body to those skilled in the art, it is proper to define the bottle body by its method of manufacture, and to contrast this with the method of manufacture of the neck assembly and cap which give those components different characteristics that are perceptible in the physical end product.

A person skilled in the art would readily be able to distinguish an extrusion blow moulded bottle body from a bottle body made by other means, especially an injection stretch blow moulded bottle body, as bottles produced by the two methods have fundamental differences.

For example, injection stretch blow moulded bottles have injection moulded necks which are thicker than the rest of the bottle, they can be made to very fine tolerances, and even if the walls of the bottle are made thinner to reduce weight, the thickness of the necks remain unaffected.

In contrast, extension blow moulded bottles have weak necks that get correspondingly weaker as the bottle and its walls get thinner.

As a result, the necks of extrusion blow moulded bottles cannot be made to the same tolerances as injection stretch blow moulded bottle necks, the necks tend to be oval rather than circular, they have imperfect top surfaces, and they have excess material where the seam meets the opening of the neck.

Furthermore, extrusion blow moulded bottles always have a seam and they can be formed with a handle that the user can pass fingers through, in contrast injection stretch blow moulded

bottles never have a seam and cannot be formed with a handle that the user can put fingers through. In addition an injection stretch blow moulded bottle would normally have a dimple on its base where the plastic is injected and they are symmetrical around at least one axis, if not two. Extrusion blow moulded bottles never have a dimple and are not necessarily symmetrical.

In appellants' specification at page 3 line 19, attention is drawn to the fact that when appellants' specification addresses extrusion blow moulding, injection stretch blow moulding is not included.

In re Thorpe supports the assertion that if the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP, paragraph 2113).

In the present context, it is submitted that one skilled in the art would be readily distinguish the manner of manufacture of each of the components from the product.

Gach does not describe the manner of moulding its container, but as pointed out in the APPEAL BRIEF at page 12, Gach's container must be strong enough to resist a fitting force, and light weight extrusion blow moulded containers are structurally weak throughout.

By contrast, light weight injection stretch blow moulded bottles have structurally strong necks. Therefore one skilled in the art is not led to consider an extrusion blow moulded container.

Graboski discloses a method of multilayer extrusion that could be used to provide a light barrier. A container produced by Graboski's method would equally be recognisable and distinguishable from a thin-walled extrusion blow moulded bottle body. Graboski describes a range of wall thicknesses of 0.381 mm (0.015in.) to 2.159mm (0.085in.) see column 3 lines 51 to 58. For most of this range it would not be economic to make a milk bottle at the average of these thicknesses. Normal HDPE extrusion blow moulded bottles, which are monolayer, are 0.4 to 0.5mm thick in order to avoid pinholes in the bottle wall, but never over 0.9 mm.

Appellants' give exemplary thicknesses at page 5 line 10 of appellants' specification. It is denied that a man skilled in the art could produce a product using the teachings of Gach and Graboski that was the same as the product defined in claim 16. The missing link is the lack of anything to teach one skilled in the art that the different components would have different properties arising from their manufacturing method.

The assertion that a thin-walled extrusion blow moulded bottle body can be identified by inspection of the body alone is supported by the fact that Exhibit I describes at page 4 lines 13 to 36 characteristics of container necks formed by extrusion blow moulding, similar to those described by the appellants at page 4 line 6 to 18 of appellants' specification. When independent manufacturers concur, it is submitted that the examiner should accept that the limitation at least to extrusion blow moulded bottle bodies is a product limitation sufficient to distinguish claim 16 from the prior art.

Note that the reference to claim 11 on page 4 line 9 of the SUPPLEMENTAL EXAMINERS ANSWER should apparently be a reference to claim 16.

Re Point 2 of the REMAND TO THE EXAMINER:

The examiner has not introduced any new ground of rejection of any of the claims based on Nolan. Therefore the references to Nolan are simply to deny the appellants' argument that its invention solves a long-standing problem of reliably mating a **resealable** injection moulded cap to an extrusion blow moulded thin-walled bottle body as set out on page 15 lines 1 to 4 of appellant's APPEAL BRIEF.

In the REPLY BRIEF mailed October 14, 2003, appellants discuss Nolan and acknowledge that Figure 9 describes a typical prior art milk bottle. It is true, as the examiner points out, that the embodiment of Nolan's Figure 9 attempts to solve the technical problem of resealability by using a backing layer that may then serve as a gasket for subsequent reclosure of the bottle by the cap. Nolan therefore recognises that the technical problem solved by appellants' present invention existed at least as early as Nolan's filing date of February 17, 1987.

As already explained in appellants' REPLY BRIEF, gaskets of this type are poor resealing devices (for example see page 3 lines 15 to 18). The gaskets described in Nolan are primarily used in containers of dry goods. The primary purpose of the gasket is as carrier/backing material for the foil during manufacture. The foil is attached to the gasket by a layer of wax. During the process of heat sealing the foil to the neck of the container the wax melts and the foil detaches from the gasket. Gaskets of the Nolan type are rarely used in liquid containers because the liquid tends to soak into the gasket upon reseal. The layer of wax and the other components of the gasket also render them expensive and as such it would be

uneconomical to use them in milk bottles. The Nolan solution may provide a satisfactory **primary seal**, as did other prior art milk bottles, but it has no impact on the technical problem of **cap-resealability** and **container-weight** which, as explained in the APPEAL BRIEF, are simultaneously solved by appellants' present invention.

Re Point 3 of the REMAND TO THE EXAMINER:

The examiner now comments on Exhibit I.

On page 7, line 21 of the SUPPLEMENTAL EXAMINERS ANSWER, the examiner suggests that appellants' invention is that the cap is sealed to the bottle by a foil liner that is heat sealed to the rim of the container. This demonstrates the examiner's fundamental misunderstanding of the invention as claimed.

A conventional injection moulded cap is removably secured to the neck. The closure is resealable because both cap and neck are injection moulded components that can be made to reliably reseal.

None of the other solutions work completely as they all fall foul of the mismatch in tolerances between a conventional injection moulded cap and an extrusion blow moulded bottle, and they perform badly on tamper evidence, primary seal or secondary seal criteria, or a combination of all of them.

Appellants' claimed technology performs exceptionally well in all of these criteria, because of its novel approach – to DOUBLE weld a separate neck (i.e. a spout) to a bottle, and primary seal with the foil – thereby allowing the consumer to rupture this thin foil to gain access, and allowing the consumer to reseal between the spout and cap, which are both injection moulded components.

It is of course irrelevant and expected that a competitor points out numerous alleged problems with appellant's invention.

o

Further submissions in support of the existence of Long Felt Need:

The long felt need that appellants assert is the creation of a **resealable** cap for an extrusion blow moulded bottle body.

Leakage from the primary seal is of most concern to bottlers, and they have attempted to solve the problem by using a peelable foil. Resealability, on the other hand, is a consumer issue.

The use of peelable foils has not completely eliminated the leakage problem. If the cap is applied to the bottle too tightly, it distorts the neck, the foil does not sit flush to the neck, and as a result does not form a good seal. If the cap is not secured tightly enough, the foil will not contact the lip on the neck of the bottle evenly all the way around its circumference, and as a result the foil will fail to seal the neck all the way round, resulting in gross leakage. Furthermore, very few milk bottles in the US use peelable foils due to the additional expense.

The cost of peelable foils is about \$2 per thousand bottles, and around 9 billion milk bottles are produced in the USA per year, therefore the additional expense of using foils would cost the industry about \$18 million.

In response to the examiner's statement that appellants showing of a long felt need is not sufficient, appellants refer the Board to older prior art such as USP 3223269 (Williams) assigned to Owens-Illinois Glass Company which describes the problems of leakage created by variations in the finish of a bottleneck, see column 1 line 29 onwards. Although this 1965 publication is concerned with the use of moulded pliable plastics caps made of material such as polyethylene in conjunction with glass or rigid plastic material bottles, it clearly demonstrates that leakage issues are a technical problem that has been recognised for many years.

The appellants further submit new exhibits J and K from the US trade press relevant to this technical field

- Exhibit J is a copy of an article from the Winter Edition 2002 of Dairy Foods Magazine which discusses the problem of leakage in relation to plastic gallons. This emphasises the fact that both initial-leakage and reseal-leakage remain a problem for consumers and retailers using the most up to date closures.
- Exhibit K provides several articles that discuss the technical problems of leakage and resealability:
 - Dairy Field, 185(3): 1(3), March 2002 in which a passage concerning the ongoing quest for resealability has been highlighted;
 - Dairy Foods, 104(1): 56, January 2003 announcing a Portola product aimed at solving the same problem; and

- Dairy Field, 183(4): 66, April 2000 discussing the benefits of the introduction of a resealable closure.

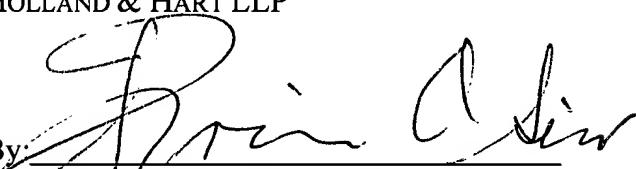
Conclusion:

Again it is respectfully requested that the examiner's final rejection of claims 12-16 of appellants' application be reversed.

Respectfully submitted,

HOLLAND & HART LLP

By:



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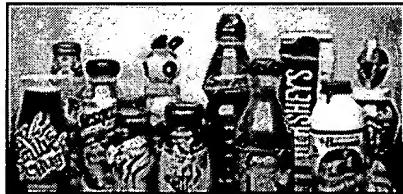
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- [Safety and Quality Package Features](#)
- [A Closer Look](#)
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Selling More Milk

Topping It Off: Caps and Closures

Fluid milk processors have traditionally viewed the milk container as merely an expense, one in which they constantly try to find the lowest cost solution. In fact, the container offers a great opportunity to act as a powerful marketing tool to help sell more milk, and at the same time, make it a more profitable item in their product portfolio. One way to do this is by changing the cap and closure system.

Caps and closures are more than simply a means to keep a beverage in its container. Most importantly, caps and closures keep product fresh, prevent leakage



Caps and closures provide marketers much more than simply a means to contain a beverage. It can be one of the easiest ways to add value and create a point of difference in the competitive beverage marketplace.

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and ensure safety, through tamper-evident features (see story on safety and quality features). They also can be used for promotions, as marketing tools, for added convenience drinking and to turn an ordinary container into a collector's item.

When choosing a cap and closure system, the most important attributes to consider are seal security, capping efficiency and tamper evidence. These attributes vary by system, as well as by supplier. It's important to communicate with your supplier to understand how a system works with the container you use. Caps and closures cannot work alone. They work in partnership with the container.

Plastic offers most variety

There are a variety of cap and closure options for all fluid beverage containers. Plastic containers provide the most freedom in selection and are the focus of this article.

When it comes to plastic bottles, the blow-molded neck finish must complement the cap in order to successfully contain the product. To overcome many of the production and leakage problems that arise from incompatible neck finishes and caps, many of today's suppliers offer integrated systems (mold design, neck tooling and cap and closure selection) that work in combination with each other.

"Our customers' molds have to do more for them [today]," says one such supplier. "They may require a distinctive shape to separate their container from others, or an ability to apply varying labels.

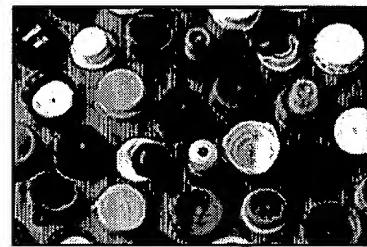
"This trend is the result of recent consolidation of customers into larger, more centralized operations. These companies rely on distinctive packaging and a varied product mix to help grow their market share," he adds.

Dairies are most familiar with cap and closure systems for plastic gallon and half-gallon jugs. These caps measure 38mm in diameter and come in two basic styles: press-on and threaded.

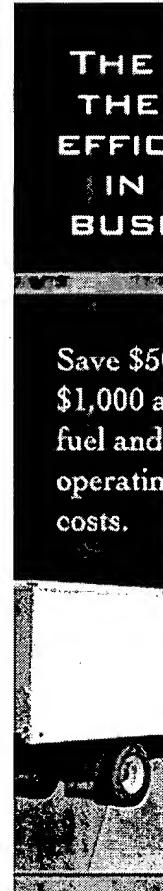
Press-on caps allow for very efficient capping speeds during the bottling process. Consumers find it easy to snap the cap on and off. Press-on caps have an inner valve that creates a plug when it is snapped in place. Sometimes press-on caps include an inner seal for added freshness, but often the inner valve does not permit the use of any type of induction seal because the valve ridge could puncture the seal. However, for tamper evidence, press-on caps are almost always designed with a tear-away ring that unwinds from the cap, enabling it to be opened.

Threaded caps are designed to be either snapped or screwed on, and always screwed off. Snap-on caps, like press-on caps, typically allow for greater production line speeds.

Threaded caps can be either unlined and



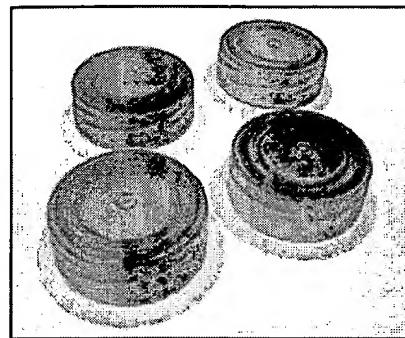
Suppliers offer a variety of cap and closure systems. Safety seals are typically built into the cap.



POINTS OF INTEREST

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plug-styled like the press-on cap, or they can be lined to create a heat-induction seal. In the past year, a variety of suppliers have started offering premium threaded caps that include features such as more threads to minimize chances of stripping and allow for maximum holding strength; a stronger and shortened bottle top lip to minimize collapsing during filling and create a superior seal; and a combined liner with valve ridge. In this last scenario, the plug valve is not as pronounced as traditional plug seals, so that it will not puncture the lining after it has been applied to the bottle opening. This type of cap provides total leak protection because the liner creates a seal before the container is opened, and then during refrigerated storage, the valve creates a leak-proof plug. Premium features can increase cap costs, but the actual and perceived benefits are well worth the investment.



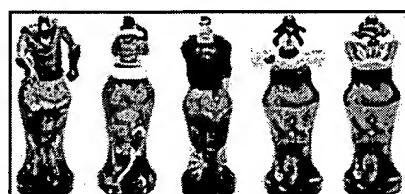
Jug caps no longer are limited to red for whole milk, blue for low-fat and pink for nonfat. Unique resins, such as translucent pastels, provide a point of distinction in the dairy case.

Liners form a seal through a heat induction process. Liners are meant to preserve freshness and provide tamper evidence. They are typically made of foam or foil. Some liners are unnecessarily hard to use. It helps when there is a tab that users can grasp for easy removal.

A different type of liner offered by beverage cap suppliers and used for years by carbonated beverage and fruit drink manufacturers is a compression liner seal. Compression liners are found on the inside top of the cap and are formed by a secondary molding process. They are a permanent part of the cap and are not removed after opening. Compression liners are made of soft plastic and are meant to hug imperfections on the top lip of the bottle, maximizing the sealing capabilities of the cap.

Like press-on caps, threaded caps usually include some form of safety ring, either one that has a pull-tab and unwinds from the cap, or one that separates itself from the cap when the cap is twisted. Some suppliers offer tamper-evident rings that remain with the cap after the first opening. It is then removed from the cap and discarded. Consumers like this feature because it eliminates the possibility of a forgotten ring on the bottleneck from falling into a glass during pouring.

There is no rule that says a milk cap, particularly for single-serve bottles, must be 38mm. In fact, 28mm caps, such as those used on soft drinks and sports beverages are starting to show up on milk beverages in an effort to more closely resemble the drinking experience of these other beverages. These caps can include a dispensing or sports closure for added convenience drinking. Some suppliers offer 38mm sports closures that complement traditional



Reusable bottles designed in the likeness of kid's favorite cartoon characters, which includes character squeeze caps, command a higher suggested retail price than similar beverages, making these drinks more profitable to both the manufacturer and retailer.

38mm capping equipment.

Larger caps (43mm) are also popular on some single-serve bottles. Larger openings provide for a "chug-a-lug" effect.

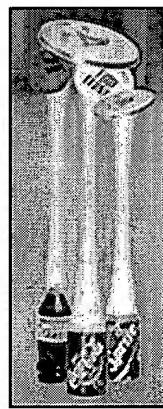
Plastic caps can be designed in a variety of patterns, which can be used to offer consumers an improved gripping surface. The more firm the plastic from which the cap is made, the more design opportunities that exist, such as unique grooves or rounded edges. Such designs turn ordinary single-serve bottles of milk into cool beverages.

Consumers become familiar with unique, proprietary cap designs and this enhances the brand value. For example, Milk Chug® and NesQuik® bottles both possess distinctive caps that consumers readily identify with the respective brand.

It is important to note that not all caps work on all bottle materials. It is important to work closely with your supplier to make sure the desired cap design complements the bottle in order to properly contain product and provide maximum quality and safety.

Not to be forgotten, milk cartons can become easier to open with the addition of plastic spouts.

The juice industry learned this about ten years ago and consumers have come to expect this feature on half-gallon cartons. Such spouts comprise a threaded finish, much like that of a bottle, and a matching threaded cap. They make traditional paperboard milk cartons recloseable, shakeable and tamper evident. There are a wide variety of spouts from which to choose. Options include size, color, pattern and tamper-evident features.



Who says beverage cans can't boast creative closures? It's not Coca-Cola. Special "pop-top" cans join the ranks of bottle caps to offer consumers cash prizes and other incentives.

Marketing features of caps

All flattop plastic caps can sport printed labels or for that matter be printed on directly, not just to inform consumers to the type of milk inside but also for various promotions. Imagine if gallon caps were dressed with Disney characters. Kids might anxiously finish off a gallon of milk just to buy another to build their cap collection.

Labels can feature instant coupons such as "\$1.00 off the purchase of this gallon of milk and a box of cereal."

Caps can be embossed with a milk's brand to build awareness.

Caps that include a liner and safety ring can use the inside of the cap as a contest piece or proof of purchase for a variety of promotions. Imagine "millionaire milk." The question and four possible answers are located on a label on the top of the cap and the answer is either inside the cap or on the liner.

Caps can come in cool colors such as translucent purple and neon yellow and foil liners can have holographic designs--a far cry from the milk industry's standard red, blue and pink for caps and white or foil for liners. Why not have the white liner sport a pumpkin at Halloween or a flag for Independence Day?

Closures just for kids

Beverage marketers know value-added packaging is a great way to reach the very important and profitable kid consumer segment. Kids want entertaining and interactive packaging, and the bottle cap is a great way to appeal to this group.

Atlanta-based In Zone Brands Inc., commands \$1.99 to \$2.99 per 12-fl-oz bottle of BellyWashers™, a 100% vitamin C-fortified juice drink packed in collectable, refillable sports bottles with toppers created in the likeness of high kid-appeal cartoon characters.

"It's the collectability of the line that keeps the kids coming back for more," adds Jim Scott, pres. and CEO. "And kid-driven purchases are a critical component in the growing non-carbonated beverage market." To keep kids interested, new characters are introduced into the line every 60 to 90 days, while others get retired.

In Zone's approach may be a bit dramatic for some of today's fluid milk marketers, but the key here is that In Zone maximizes the value of its package to appeal to kids, and the suggested retail price and sales results confirm the approach is profitable.

Another creative kid-focused cap concept is used by Brazil's Ambev, which offers a drink beverage bottle featuring a full-body shrink sleeve label sporting various Pokemon® characters along with a cap that, when twisted open, releases a small Pokemon toy.

A few years ago, Country Fresh Dairy, a Dean Foods Co., Grand Rapids, Mi., marketed a multi-pack of half-pint milk bottles to kids called Milk-It!® The lightweight, squeezable bottles were made of low-density polyethylene and topped with an innovative, spill-proof cap that formed a squeeze spout after a tamper-evident device was removed.

The opportunities are endless when it comes to creating a cap to more effectively market milk. Top it off right!



Twist-open caps
are not the only
option for fluid
beverages.
Coffee-Mate's
new, unique
resealable flip-
top lid makes
plastic bottles
easier to open
and easier to
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feature that
could also
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products.

Safety and Quality Package

Features

More than ever before, today's consumer craves a sense of security. Fluid milk manufacturers have a chance to be leaders during these unsure times by offering consumers the safest and highest quality milk. This is accomplished through the use of tamper-evident features. When danger is locked out, freshness is sealed in.

Tamper evidence is not a legal issue in the food industry; it's an emotional one. Therefore, when you include tamper-evident features, make sure you bring it to consumers' attention. Point it out on the container, in ads and through in-store promotions such as shelf danglers. Safe and secure packaging is a marketing tool that turns ordinary milk into a comfort food.

Keep in mind, consumers are usually willing to spend a little bit more for safety and quality, but they need to be informed about these features again and again.

First in line for safety

When shopping the dairy case, consumers want the primary tamper-evident feature to be apparent.

A plastic bottle's first line of defense in efforts to ensure safety comes in the form of a tamper-evident feature with the actual cap. The three most common features are a safety ring, shrink-wrap band and extended shrink-wrap sleeve.

Safety rings, by far, are the most common tamper-evident feature on single-serve plastic bottles and large volume plastic jugs. However, they are only good as long as they work, and there are many low-quality caps in the marketplace that can be gently twisted open without breaking the ring. This only needs to happen once to a consumer and all faith is lost in a manufacturer.

Suppliers involved with both bottle molds and caps can help you identify a closure system that prevents this undesirable situation. One such solution is an anti-rotational feature on the bottle's neck. For example, the bottle's neck can have a reverse lug design that does not allow cap rotation in either direction until the tamper-evident band is removed. For a marketer to benefit from a bottle with this feature, it must be brought to the consumers' attention. Caps can be imprinted with statements such as "Safely sealed tight when cap doesn't turn."

Though not common on refrigerated milk products but appearing occasionally on shelf-stable dairy-based drinks, shrink-wrap bands are easy to apply and relatively inexpensive, particularly if they are already used on other products in a dairy, i.e., sour cream, yogurt, etc. Shrink-wrap bands can act as colorful billboard space to catch the consumer's eye when shopping the dairy case. Shrink-wrap bands boldly printed with the phrase "safety

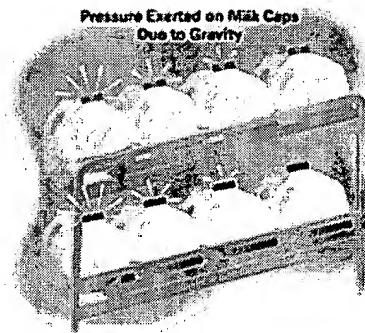


Foil closures on single-serve bottles create a hermetic seal that helps extend shelflife. On plastic gallons, foil seals prevent leakage.

sealed in" assure customers that no one has tampered with the product. However, keep in mind that improperly fitted shrink-wrap bands can also sometimes be re-moved without breaking apart. To prevent this unfortunate occurrence, shrink-wrap bands must be properly fitted and positioned and heat tunnel time and temperatures constantly monitored.

For single-serve bottle manufacturers who choose to use full-body shrink labels, it is quite easy and inexpensive to design the label to extend over the cap and include a perforation for easy twist off. This feature nicely complements caps that include a heat induction sealed liner.

Shrink-wrap bands and extended full-body shrink labels are not a primary tamper-evident option for spouts on cartons; however, external safety rings do the trick.



Studies show that the front gallon package may experience as much as 15 lbs. of pressure when refrigerated shelves are angled at 30 degrees.

Secondary safety features enhance quality

In addition to the tamper-evident feature on the cap, an inner seal provides consumers with added security. For plastic bottles, the seal is typically foam or foil. With spouts on cartons, the seal could also be a plastic pull ring.

Foam and foil seals are applied to caps through a heat-induction process. It is very important that the process be monitored to ensure proper sealing. An improperly sealed product not only is a waste of labor and materials, but it also is an indicator of a manufacturer's inadequate quality assurance program.

Various induction-sealing systems are available to bottlers. In general, lined caps are applied to a bottle with the proper amount of torque to create a closed system. The container passes through the sealing system, where the cap is exposed to heat, which causes a sealant layer to melt and bond to the bottle opening.

Foil seals, when properly applied, are capable of creating a hermetic seal. This is extremely important with extended shelflife bottling systems.

Keep in mind that consumers appreciate the added security of these seals; however, they can become frustrated when the seal is difficult to open. Small flaps or tabs assist consumers with easy removal.

Nobody wants gallons to leak

The most apparent perceived breach in fluid milk safety comes from plastic gallons. This is because plastic gallons, which are lightweight and not very sturdy, are typically retailed in gravity-fed shelves. The force of gravity exerts pressure on the jug. Depending on the type and effectiveness of the cap and closure system, milk jugs can leak.

This results in a mess, which consumers perceive as an indicator of poor quality and freshness, and also raises the question of safety. Retailers simply get irritated.

High-quality cap and closure systems, when properly applied, provide a strong seal, which prevents milk from being exposed to airborne contaminants, unpleasant odors and smells, and from leaking. Leaking is probably the least detrimental to product quality and freshness, but to consumers and retailers, it's the worst aesthetically.

Friendly dispensing closures

As fluid milk marketers explore the many options available to them in the caps and closures arena, dispensing closures, often referred to as sport caps, are becoming more attractive, particularly for flavored-milk beverages positioned as refreshing drinks.

All of the aforementioned tamper-evident features apply to such dispensing closures. However, there are additional user-friendly options that can be included.

One is the overcap, which is designed to protect the push-pull closure mouthpiece from contamination. Push-pull closures are composed of a valve and bottle seal. Some suppliers offer overcaps designed to push the valve closed when pressure is applied, making it seal completely. This design feature prevents leakage even when the bottle is turned upside down, which is an improvement over many current designs that can give consumers a false sense of security when the overcap is applied.

Another is a pinchproof push-pull closure, an important feature for dispensing closures for kids' drinks. Such closures are designed so that when the spout is opened it remains recessed in the base, allowing no gap for potential pinching when pushed closed by either little hands or the mouth.

Contact Information for Suppliers of Products Mentioned

Caps and closures:

Alcoa Closure Systems International
317/481-4203

International Plastics
& Equipment Corp.
800/377-4732

Berry Plastics Corp.
812/424-2904

Owens-Illinois Closures Inc.
800/537-0178

Blackhawk Molding Corp.
630/543-3900

The PopStraw Co.
810/773-9940

Blue Ridge
828/454-0684

Portola Packaging Inc.
408/441-1958

Cap Design International Ltd.
818/422-2285

Rexam Closures
& Containers
812/867-6671

Consumer Cap Corp.
888/545-5504

U.S. Cap Systems Corp.
800/584-9160

Creative Packaging Corp.
847/808-7200

Elopak
248/486-4600

White Cap Inc.
630/515-8383

International Paper
901/763-6157

Tamper-evident seals and bands:

American Bank Note
Holographics Inc.
914/592-2355

Halpak Plastics Inc.
516/242-1100

American Fuji Seal Inc.
800/533-3854

ITW Auto-Sleeve
800/852-4571

Ameri-Seal Inc.
800/220-7981

Pechiney Plastics
Packaging
330/923-5281

Berry Plastics Corp.
812/424-2904

Seal-It Inc.
800/325-3965

Gilbreth Packaging Systems
800/758-5888

SleeveCo Inc.
800/624-0204

H.S. Crocker Co.
847/669-3600

Sleever International
905/565-0952

Supplement sponsor:
Dairy Management Inc.

10255 W. Higgins Road
Rosemont, Ill. 60018
800/248-8829
www.extraordinarydairy.com

A Closer Look

Non-carbonated drink and water marketers are continuously exploring package options to give them an edge in the competitive beverage industry. Fluid milk manufacturers must also treat the package as a dynamic component of the overall product, one that requires continuous updating.

Dannon Waters of North America has rolled out the first PET gallon bottle, saying that this gallon jug of water is designed to meet the needs of families for home and tabletop use. The company boasts the new item as a "Clear Bottle for Better Taste." For easy pouring, the proprietary raindrop-shaped jug, which incorporates Dannon's trademark wave



pattern throughout, includes a handle with contoured finger holds. The Dannon logo is blow-molded on two sides of the bottle near the neck for enhanced brand identity.

Just like fluid milk, gallon jugs are the largest percent of total water volume. Yet, also like fluid milk, jug sales have not kept up with the double-digit growth of the single-serving size. "With this clear innovation, retailers will have the opportunity to revitalize their jug sales by getting new users into jug consumption," says Jean-Philippe Martin, dir. of marketing for Dannon Natural Spring Water.



Another industry first goes to Arizona Beverages, which has built its business on single-serve glass bottles and is now extending the line to include multi-serving PET bottles. It does this with a 42-oz longneck bottle, which is characteristic of Arizona bottles, and includes a double-sided grip feature designed for easier pouring. The bottle also includes a blow-molded Arizona logo. An important enhancement to this innovative new package is a multi-layer, oxygen scavenger system for unsurpassed product protection.

Water direct from the Fiji Islands distinguishes itself from other bottled waters by using the clear PET bottle to display a three-dimensional tropical flowers and waterfall scene. The flowers are printed on the front clear plastic label, while the waterfall is printed on the inside of the back paper label. Colorful multi-pack handles continue the tropical theme.

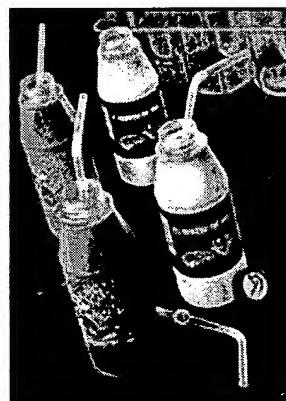


Young Hawaiian Punch consumers are getting what they want--the great taste of this tropical drink in an innovative, clear flexible package. Mott's Inc. is replacing its nine-pack juice box line with stand-up pouches. The patented pouch is the first pouch to include clear areas where consumers can see the vibrant colors of what's inside. In addition, the hourglass shape of the pouch fits easily into kids' hands while consuming product through the provided straw.

Straw-in-Bottle Adds Value to Package

Adding value to single-serve bottles comes in many ways. For Quality Dairy Co. (QDC), Lansing, Mich., it's adding a straw that pops through the mouth of the bottle as soon as the cap is removed.

The concept of combining straw with single-serve container is based on extensive consumer research within the packaging and beverage industries, which was conducted by The PopStraw Co. (TPC), Detroit,



Mich., innovators of the patented PopStraw Inside™. Inserted at the bottling/filling stage into traditional PET plastic beverage bottles, the technology assures that the buoyancy-enhanced straw, which consists of FDA-approved polypropylene, appears on command, every time. The straw provides a fun, sanitary and ideal way for consumers to enjoy milk and other beverages on-the-go without the worry of spilling, tipping, splashing or the inconvenience of paper-wrapped or unsanitary conventional straws.

"By adding PopStraw to our 16-oz single-serve milk, water and juice, we experienced a great market impact because innovative value-added concepts like PopStraw are mandatory in this business," says Stan Martin, QDC president. "We added PopStraw to a number of our beverage items and watched our milk and juice sales increase significantly."

The response from all ages and socio-economic backgrounds has been overwhelmingly positive. QDC's unit volume sales surged 14% in milk bottles with PopStraw compared to the same 13-week period a year ago. The company reports that this double-digit increase occurred despite a 10-cent increase in retail selling price. This sales increase indicates that consumers recognize the value of enhanced packaging and are willing to pay for it.

This was further confirmed by an independent telephone survey conducted by Chicago-based Communications Research Inc., among consumers who provided contact information after submitting a hangtag from QDC with PopStraw Inside beverage containers. Consumers commented that they like the PopStraw feature because it made the product more convenient, less messy, less likely to spill, easy for kids to use, good for use in the car and easy to drink from. Of those consumers who indicated they would purchase the PopStraw product again, 87% said they would purchase the product at least once a week. Among those consumers who were aware PopStraw was inside the container prior to purchase, 32% said the PopStraw feature was extremely important to their purchase decision. Moreover, 9% said PopStraw Inside prompted their trial of the beverage.

This supports that there is a great deal of power in value-added packaging features for the beverage marketer.

Dairy Processors Aggressively Market Milk with Packaging

The prior three issues of "Packaging Opportunities for Fluid Milk" presented dairy processors with ideas on how to use package features to market milk. Here are examples of recently introduced milk beverages that exemplify packaging at its best.

Des Moines, Iowa-based Anderson Erickson Dairy spiced up its single-serve bottle line with a flashy name and signature PET bottle. New Icy Cold to Go! bottles feature a



contoured neckline that includes pronounced, blow-molded AE logos to build brand identity.

The Dannon Co., Tarrytown, N.Y., takes its single-serve Frusion™ fruit 'n' yogurt smoothie line to club stores. This convenience beverage was originally marketed solely through c-stores, appealing to commuters looking for a nutritious breakfast-on-the-run beverage. Due to its overwhelming success, Dannon decided to make the product available in multi-packs for added convenience. A cardboard top and bottom reinforce the shrink-wrapped six-pack. The cardboard also provides space for promotions and brand building.

Brand and character licensing helps sell consumer products ranging from toothpaste to snack crackers. It helps market milk too.

Single-serve fluid milk marketing leader Smith Dairy Products Co., Orrville, Ohio, showed consumers that there is more to baseball than a cold beer and peanuts. The company teamed up with Major League Baseball to develop packaging that features all 30 team insignias for either the American League or the National League. The bottles were sold this summer at grocery stores as a Limited Edition, turning them into collectibles for baseball fans of all ages.



Smith Dairy repeatedly uses full-body stretch sleeves on its single-serve milk bottles to more effectively market milk. "Our challenge is to create excitement in the dairy case or cooler door," says Bill McCabe, v.p. of marketing. "By offering new product packaging like the Major League Baseball Moovers™, the consumer's shopping experience is more interesting and fun."

Dairies are realizing that with the right package, product development has no limit. What was once only available either at a coffee bar or in shelf-stable glass bottles now comes fresh from your grocers' dairy case. Designed not to look just like another bottle of flavored milk, new Folgers® Jakada™ is a joint venture between Morningstar Foods Inc., a subsidiary of Suiza Foods Corp., Dallas, and The Procter & Gamble Co., Cincinnati. Jakada is the first chilled coffee-milk drink made from Mountain Grown® Folgers coffee and low-fat milk.



The trend in larger volume plastic jugs is to use opaque resin in order to spare the milk from nutrient and flavor loss through light oxidation. Exposure to light need not be lengthy for the product to suffer. With direct sunlight, oxidation starts in as little as four minutes; with fluorescent lighting, it's as little as four hours.

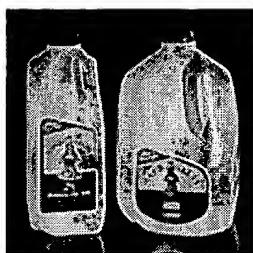
For Crowley Foods, Binghamton, N.Y., after the rollout of its PenSupreme's Flavor Savor™ bottle, sales at growth-



target accounts climbed 40%, while margins increased 2%.

"Seeing increases of this size in both sales and margins is really gratifying," says Jerry Gaube, special projects mgr. "You don't often see these kinds of numbers in mature markets like ours. This is an unqualified success for PenSupreme."

Gaube attributes the success to the bottle itself, and the effort put into launching it. The Flavor Savor bottle is an opaque white plastic container that uses eye-catching labeling to give the bottle a vibrant appearance in the dairy case.

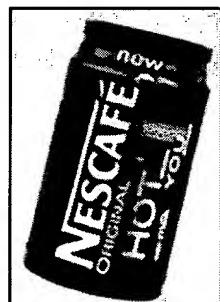


Franklin Park, Ill.-based Dean Foods Co. also uses similar opaque resin for its Land O'Lake's brand half-gallon and gallon jugs of milk.

"Because research shows that oxidation degrades milk's taste and its nutritional value, we developed the FlavorTight™ packaging," says Pat Graizer, v.p. of sales and marketing. "[The FlavorTight bottle] is like making nature's perfect food even better."

Around the World

An extremely dynamic package hit supermarkets this past summer in the United Kingdom. And better yet for the dairy industry, it contains a milk-based beverage. The new self-heating Nescafé Hot When You Want coffee milk drink comes in a three-piece steel can with an internal volume of 11.16 oz (330 ml). To make room for the water and quicklime heat-generating chamber, which consumes a significant portion of the can's interior, the can holds only 7.1oz (210 ml) of fluid. Heating is activated by pushing in a button on the base of the can, which produces a chemical reaction between the water and quicklime.



The outer shell is as impressive as the inside. Unlike other beverage cans, this can must protect the consumer from the 140°F that is reached when the heating system is activated. This is accomplished through a combination of an insulated corrugated liner with a specially developed outer shrink sleeve film

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Petrak, Lynn

There was a time when closures and caps were a mere finishing touch for many dairy products. As overall packaging continues to evolve and become more innovative, however, opening and closing features have taken on new prominence.

According to Freedonia Group Inc., a Cleveland, Ohio, market research firm, global demand for caps and closures will reach 1.1 trillion units by 2005, driven by rising prosperity and consumer interest, as well as the decline of closureless packaging for gable top and aseptic drink cartons. Within the United States, shipments of caps and closures are expected to rise three percent annually to 157 billion units within three years. According to Freedonia Group's latest report, "Caps and Closures," the beverage industry, the largest market for closures, will continue to grow. The increase is expected to be fueled in part by the dairy segment's use of plastic screw caps over traditional paperboard packaging.

While the numbers speak to the demand, there is also diversity behind the statistics. Indeed, there are several varieties of caps and closures available, and although most of them are plastic, they vary from pour spouts on paperboard cartons to dual-closure configurations to innovative lids, liners and built-in utensils for grab-and-go products. As with other packaging technologies, consumer market demands are big drivers behind the closure trends.

"Dairy packaging has become much more consumer friendly," says Rachel Kyllo, vice president of marketing for Marigold Foods LLC, which manufactures the Kemps line of milk, ice cream, beverages, and cultured products. Kemps' Yo-J, a blend of real fruit juice and yogurt, for example, was recently repackaged, including a new cap. "It's a four-color litho print gable top carton with a pour spout. We did it to become more competitive in the premium juice segment," adds Kyllo.

A Convenient Excuse

There's probably no overstating the significance of the convenience-oriented marketplace and with it, the surge in packaging that appeals to time-crunched consumers. "In the dairy field itself, we're seeing a lot more single-serve packaging, due to demand for the portability of milk-type products. We probably focus more on new products for single

serve than we have before," remarks Rodger Moody, vice president of new products for Portola Packaging Inc., San Jose, Calif., which manufactures a full line of tamper-resistant plastic closures for the dairy, bottled water and food industries, along with bottles and filling equipment.

According to Moody, portability goes hand in hand with the dairy industry's drive to compete with other beverages. "These types of caps initially started in custom packaging like Dean's Milk Chugs. Now we're really getting to more premium products, with PET packaging," he says. "That really opened up the market toward high-end products -- you're turning commodity milk into a high-end product."

Portola offers its dairy customers snap closures, screw closures, and combination snap-screw closures, in addition to a variety of foil closures, sports caps, and tamper-evident fitments for gable top cartons. The company's equipment division supports the closures through a line of conveyance systems, application systems, feeding systems, cap labeling systems, and foil and foam insertion machines.

In another nod to the convenience factor, Portola has developed new foils for package tops. "The new foils we introduced about a year ago have a wing tip on them for easy peel," says Moody. "We went away from the standard flat foil or tri-tab to a whole half tab. And you're going to see that more on 'freshness guaranteed' packaging."

Portability and ease of use were also issues that led to the development of another innovative closure. In 1999, Landis Plastics of Chicago Ridge, Ill., worked with General Mills to create a three-piece lid for the Columbo line of yogurt. "The lid itself is three pieces -- there is a mold within the lid that is a bowl of a spoon and a handle. You push out the bowl of the spoon and the ladle and lock them together, then it's ready to be eaten," explains John Sabey, sales manager, adding that the product has a definite niche for today's consumers. "It's to be value-added and for convenience. Think about it: if you want to have yogurt for lunch or a snack and go to the store, what do you do?"

With the success of the Columbo in-lid spoon, which Landis co-patented with General Mills, the company is looking to expand similar technology. "For 2002, one of our goals is to get this into other food items. It could be a spoon, a fork or a spork," says Sabey, adding that such lidding would be appropriate for items like pudding, applesauce, and stew.

Another issue in the ongoing quest for convenience is resealability. "Dairy manufacturers are looking for low-cost, high productivity, customer-friendly caps. They also want the ability to reseal the cap on the bottle, so a screw cap is desired when the option is given to the end user," says Dale Berg, general manager for Blackhawk Molding Co. Inc., Addison, Ill., which supplies caps, liners and support equipment to dairy, bottled water and other food-related clients.

While convenience usually means quick and easy, the concept can spill over into other issues -- sometimes literally. "The big issue with the dairy and end user is leaking," notes Berg, noting that cleaning up

~~After a leaky dairy product can cause aggravation for consumers and
retailers alike.~~

A Packaging Palette

As consumers scan the refrigerated dairy case, they are increasingly glimpsing at a colorful array of packaging, right down to the caps and closures. In addition to providing vibrancy and tying into on-package graphics, caps and closures are often color coded by product to help shoppers make quick decisions and retailers to set up merchandising displays.

When General Mills first launched its Columbo yogurt with the in-lid spoon by Landis Plastics, they decided to make the top as vivid as possible. "It started out yellow to be an attention grabber," recalls Sabey. "Now there are more colors for different varieties -- one is blue, one is magenta. It is done for attention and design."

Likewise, Portola Packaging provides its customers a virtual palette for its caps and closures. "We offer many SKUs and product lines, and there may be five or six blues or reds. In the whole rainbow, we offer different shades and custom colors to match packages," says Moody.

Speaking of rainbow, Clariant International's Masterbatches division, with a North American office in Phoenix, manufactures millions of patented plastic caps that are designed, molded and shipped to dairies around the country. Made from low-density polyethylene resin, the caps' colors and formulations are compliant with Food and Drug Administration (FDA) regulations for food contact.

According to Jean Sirois, director of marketing for Clariant's North America operations, the food industry is following other products' leads when it comes to colorful packaging. "Food packaging is probably slower to embrace new technology because of the regulatory environment, compared to shampoo or motor oil," explains Sirois.

In recent years, Clariant has been approached by, and has approached, several dairy companies to create colorful caps and closures. "The current trend is updated packaging. It's adding effects through a lot of colors and graphics, and that means colorful caps," says Sirois, adding that dairy industry changes are promoting competition and creativity. "One change we've seen is the reduction in cardboard, especially in the smaller size, and you now have plastic caps on gallons. The biggest growth has been in single-serve milks, in chocolate and other flavors."

Because of the company's technology and equipment, Clariant can provide virtually any hue. "We can replicate any color for the customer -- the only limit is their imagination," says Sirois, pointing out that dairy products can be unique. "On the technical side, because of the fatty substance, milk poses other challenges than water or soft drinks. There is a chemistry that we have to be careful of, so there is no migration from the pigment to the milk itself."

Although there is no nationwide standard, Sirois has seen an increase in color coded caps to differentiate increasingly diverse product lines. "Most customers have their own system," he says, adding that there are some common issues. "There are some messages in color

sometimes. Red for low-fat milk, for instance, won't fly. Healthier colors are blues, yellow and greens and the obvious one is dark brown for chocolate milk."

Security Guards

On a more serious level, caps and closures represent an important consideration for dairy manufacturers for safety reasons. In the wake of the threat of bioterrorism, plus ongoing concerns about product tampering, security is more important than ever.

Portola has long offered tamper-resistant caps and fitments, including dual systems. "We've never marketed a cap that doesn't have a tamper-evident closure," says Moody, noting that the 1980s Tylenol scare spurred many in the food and beverage industries to seek such guarantees.

At Blackhawk Molding, safety and security are top priorities, even drawing attention from authorities seeking to thwart potential bioterrorist attacks. "Blackhawk has been solicited by homeland security (the federal government's new office) to share information on security for the water and milk industries," says Berg, adding that the company is well equipped to answer the call. "Many of our patents are related to tamper-evident caps."

Among other items, Blackhawk services the dairy industry by providing a "Security Twist System," which includes a Direct Drive STS capper combined with a patented "Super Quad" cap that seats itself in a well on a companion bottle. According to Berg, the system offers several advantages. "The combined package makes for better tamper-evident qualities than most competing caps in the market. This advantage is particularly timely, given the current issues with homeland security," he remarks. In addition, he says, the STS capper is easier to clean and less expensive, and the four-thread cap allows for better sealing.

Whether preventing safety and security problems or trying to spur more sales with convenient features and attention-grabbing colors, dairies and suppliers are slowly incorporating caps and closures into the marketing mix. "I think people look at marketing as a huge part of the dairy business," points out Moody.

Lynn Petrak is a freelance journalist based in the Chicagoland area.

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Trends

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A new drop band cap for non-carbonated beverages is available from Portola Packaging, Inc. The new 38mm drop band cap, the 38-3LS, with its visible, tamper-evident drop band, is designed for use with a wide range of bottled beverage products, including dairy, water, juice and new age beverages. The 38-3LS screws off quickly and easily, leaving the drop band behind.

~~Reusable and resealable, the closure is designed to lock freshness in while securely preventing product leakage.~~ The closure has been designed for use in either plug style or with a liner, and can be embossed or labeled, providing customers with additional branding opportunities.

Portola offers the cap in a wide range of standard colors and custom color matches. Designed to run with a customer's existing capping equipment, the 38-3LS has a sleek, contemporary look, and can be easily applied to either PET or HDPE bottles. The tamper-evident drop band is engineered to remain snugly in place for maximum security.

Portola Packaging, Inc.

www.portolapackaging.com.

Write in 114

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Abstract:

Johanna Foods Inc (Flemington, NJ) is introducing pint- and quart-size cartons with spouts for its Tree Ripe(TM) line of juices. ~~The reclosable cap helps prevent spills and allow for easy closure.~~ According to Melinda Champion, vice president of marketing, the Spout-Pak packaging in the smaller sizes allows users to more easily drink with making a mess on the go, and since a pint is often too much for immeidated consumption, the cap allows consumers to reseal the carton. The company is currently offering the pint-sized Spout-Pak cartons of Premium Natural Orange, Extra Orange (vitamin and calcium fortified) and Ruby Red Grapefruit juices, all not-from-concentrate. Additionally, the company is offering from-concentrate Strawberry-Orange Banana, Orange Pineapple and Apple juices with Spout-Pak closures in pint sizes. Premium Natural Orange Juice in the quart size is being offered with the Spout-Pak. Full text further discusses Johanna's use of Spout-Pak closable packaging for pint and quart size juice drinks.

Text:

Drinks processor enhances entire product line.

In a bold move to capitalize on its earlier success with International Paper's half-gallon Spout-Pak(R) cartons, Johanna Foods Inc. introduces pint- and quart-size cartons with spouts for its Tree Ripe(TM) line of juices.

The recent launch marks the first use of the popular gabletop package both in a pint size and across an entire product line of beverages.

Flemington, N.J.-based Johanna, one of the largest processors and distributors of refrigerated and aseptic fruit juices and yogurt in the United States, began offering Tree Ripe Premium not-for-concentrate orange juices in the half-gallon with spout in 1998.

~~"The reclosable cap eliminates spills and leakage and preserve flavors," says Melinda Champion, vice president of marketing. "We welcomed the chance to give the consumer added value."~~

Encouraged by the positive results, Johanna switched Tree Ripe Valencia Orange, a from-concentrate variety, to the Spout-Pak carton the following year. "Sales went up dramatically for both lines," Champion says.

While attributing some of the gain to the company's increased distribution and velocity (rate of turns), she believes packaging enhancements, particularly the pour spouts, played a major role. The company subsequently packaged all of its Tree Ripe Premium and Valencia juices, as well as its Ssips(TM) brand fruit drinks, in the half-gallon carton with spout.

Johanna then saw a market opportunity in pints. "Consumers often buy them for immediate consumption, but the traditional container is awkward to drink from and easy to spill, especially in a car," Champion says. "Also, a pint is too much for most people to drink at once, but they can't reseal the carton."

The Spout-Pak solves these problems, she points out, and offers convenience stores and other outlets the added advantage of extended refrigerated shelf life. A recent \$15-million upgrade and expansion of the Johanna juice-bottling plant provides the opportunity to move ahead. With four pasteurizing systems, seven state-of-the-art extended-shelf-life filling systems and a 75-million-gallon annual capacity, the plant is one of the largest such facilities in the United States.

A new EQ-5 filling machine, custom-engineered by the Evergreen Packaging Equipment unit of International Paper's Beverage Packaging business, applies the spouts to the 16-ounce cartons at a rate of up to 9,000 cartons per hour. The Extended Long Life (ELL) EQ-5 filler gives the juice a 60 to 70 day refrigerated shelf life, almost double that of regular fillers.

photo omitted

Evergreen's ELL technology helps customers extend the refrigerated shelf life of their juice products through carefully controlled and monitored application of double HEPA-filtered air enclosures, auto-sanitation, hydrogen peroxide and ultraviolet lights.

Johanna is now offering pint-sized Spout-Pak cartons of Premium Natural Orange, Extra Orange (vitamin and calcium fortified) and Ruby Red Grapefruit juices, all not-from-concentrate, as well as from-concentrate Strawberry-Orange Banana, Orange Pineapple and Apple juices. The quarts with spouts are currently used only for Premium Natural Orange Juice.

Johanna markets its products on the East Coast, from New England to Florida, and as far west as Detroit. The company is continuing to expand distribution.

"We're committed to providing customers with a level of service and quality unmatched in the industry," adds Robert Facchina, Johanna's president and chief executive officer. "These initiatives move us closer to our goal of becoming the premier supplier of chilled and aseptic juice and drink products to the eastern United States."

Johanna is one of the largest distributors of fruit juices, drinks and yogurt in the United States. The company offers leading retail and private label juice brands distributed nationwide through supermarkets, warehouse club stores, convenience stores, wholesalers, dairy distributors independent grocers and foodservice organizations. Johanna

also processes and markets its own Tree Ripe Premium, Tree Ripe Valencia and Ssips brands with distribution primarily in the eastern United States. Johanna owns and operates a 75-million-gallon chilled-juice bottling plant, an aseptic juice and drink box plant and a refrigerated yogurt plant, which employ more than 400.

The Beverage Packaging Business of International Paper services primarily juice, dairy and wine markets. The business employs more than 3,500 employees worldwide at eight plants in the United States and 22 international sites. -- International Paper, 2 Manhattanville Road, Purchase, N.Y., 10577, (901) 763-7271.

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Product Names : Fresh and canned fruit juices, nectars and
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